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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations (WP.29)
Executive Committee (AC.3) of the 1998 Global Agreement

PROPOSAL TO DEVELOP A GLOBAL TECHNICAL REGULATION CONCERNING HEAVY-DUTY VEHICLE EXHAUST-EMISSIONS TYPE/APPROVAL/CERTIFICATION PROCEDURE

Technical Sponsor: the European Union (EU)

Note: The text reproduced below was considered and adopted by the Executive Committee (AC.3) of the 1998 Global Agreement at its tenth session, in March 2004. It is based on document TRANS/WP.29/2004/29, that had been submitted by the European Union, not amended (TRANS/WP.29/992, para. 96).

Objective of the proposal

The objective of this proposal is to establish a Global Technical Regulation (GTR) for heavy-duty vehicle emissions. The basis will be the harmonised test procedure developed by the WHDC informal group of GRPE (see the technical reports TRANS/WP.29/GRPE/2001/2, informal document No. 4 of the forty-sixth GRPE and informal document No. 14 of the forty-seventh GRPE).

Regulations governing the exhaust-emissions from all vehicles have been in existence for many years but the methods of measurement vary. To ensure the maximum benefit to the environment as well as the efficient use of energy, it is desirable that as many countries as possible use the same high standards of emission control. For this a GTR is an important step forward.

Manufacturers of heavy-duty vehicles are already operating in a world market and it is economically inefficient for manufacturers to have to prepare different models in order to meet different emission regulations and methods of measuring CO_2/fuel consumption which are, in principle, aimed at achieving the same objective. To enable manufacturers to develop new models most effectively it is desirable that a GTR should be developed.

Description of the proposed regulation

The proposed regulation will be based on new research into the world-wide pattern of real heavy commercial vehicle use. From the collected data, two representative test cycles, one transient test cycle (WHTC) and one steady state test cycle (WHSC), have been created covering typical driving conditions in the European Union, the United States of America and Japan. Based on real life data a gearshift model was developed for translating the vehicle cycle into an engine cycle. The general laboratory conditions for the emission test and the engine family concept have been brought up to date by expert committees in ISO and now reflect the latest technologies.

The WHTC and WHSC test procedures reflect world-wide on-road heavy-duty engine operation as closely as possible and provide a marked improvement in the realism of the test procedure for measuring the emission performance of existing and future heavy-duty engines.

The performance levels to be achieved in the GTR will be discussed after validation of the proposed test cycle and procedure, by GRPE on the basis of the most recently agreed legislation in the Contracting Party countries, future environmental objectives and the cost/benefit analysis required by the 1998 Agreement.

The question of harmonised on board diagnostics (OBD) and off cycle emissions requirements will be considered in the context of the GRPE working groups dealing with these issues, led by Japan and the United States of America, respectively, and appropriate measures introduced in due course. Similarly, if necessary, additional measures can be added after later discussion.

Existing Regulations and international Standards.

UNECE Regulation:
UNECE Regulation No. 49 - Uniform Provisions Concerning the Test Procedure for Compression-Ignition (C.I.) and Natural Gas (NG) Engines as well as Positive-Ignition (P.I) Engines Fuelled with Liquefied Petroleum Gas (LPG) and Vehicles Equipped with C.I. and NG Engines and P.I. Engines Fuelled with LPG, with Regard to the Emissions of Pollutants by the Engine.

EU:
Directive 1999/96/EC of the European Parliament and of the Council on the approximation of the laws of the Member States relating to measures to be taken against the emission of gaseous and particulate pollutants from compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles and amending Council Directive 88/77/EEC;

Directive 2001/27/EC of the Commission adapting to technical progress Council Directive 88/77/EEC on the approximation of the laws of the Member States relating to measures to be taken against the emission of gaseous and particulate pollutants from compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles.

Japanese Regulation Trias:
Road Vehicles Act, Law No.185 of June 1, 1951, as last amended by law No. 100 of 2002, Article 41 "Systems and Devices of Motor Vehicles";

11-4-33 "Technical Standard for 13-Mode Exhaust Emission Test Procedure for Diesel Powered Motor Vehicles" (Jisha 899, 1983);

TRIAS 24-5-1993 "13-Mode Exhaust Emission Test Procedure for Diesel-Powered Motor Vehicles".

United States of America regulation:
United States Code of Federal Regulations Title 40 Part 86 (40 CFR Part 86), Subpart A, "General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, Light-Duty Trucks and Heavy-Duty Engines, and for 1985 and Later Model Year New Gasoline Fuelled, Natural Gas-Fuelled, Liquefied Petroleum Gas-Fuelled and Methanol-Fuelled Heavy-Duty Vehicles";

United States Code of Federal Regulations Title 40 Part 86 (40 CFR Part 86), Subpart N, "Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures".

ISO standards:
ISO 16183 (Heavy Duty Engines – Measurement of Gaseous Emissions from Raw Exhaust Gas and of Particulate Emissions Using Partial Flow Dilution Systems under Transient Test Conditions);

ISO 16185 (Road Vehicles - Engine Family for Homologation).